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The North Dakota Weather Modification Act and the Need for a Comprehensive Weather Modification Program

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NOTE

THE NORTH DAKOTA WEATHER MODIFICATION ACT AND THE NEED FOR A COMPREHENSIVE WEATHER MODIFICATION PROGRAM

> When the damage—and the problems—move from the field-by-field, case-by-case area to broad effects upon the welfare of entire states and nations, legal structures dare not lag too far behind. As the movements of moisture laden clouds cannot and do not recognize state or national boundaries, neither can regulation or reparation succeed on a parochial basis.[1]

Although weather modification is, at present, a science in its early developmental stages, some areas of weather modification activity are or may soon become practically operational.[2] The areas are broad, since the term weather modification can be defined as ". . . any intentional or inadvertent artificially produced changes in the composition, behavior, or dynamics of the atmosphere."[3] Although weather modification is primarily thought to be "rain-making" or the artificial inducement of precipitation, the subject also includes hail suppression, storm modification,[4] fog dispersal, lightning prevention and climate control. It is even suggested that "[e]xtensive research is necessary on the effects of air pollution

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1. Corbridge & Moses, *Weather Modification: Law and Administration,* 8 NAT. RES. J. 207, 226 (1968).

2. *See,* S. REP. No. 1139, 89th Cong., 2d Sess. 4-5, 32-34 (1966). For example, Dr. Werner A. Baum, Deputy Administrator of the Environmental Science Services Administration, in commenting on one of his organization's projects in the northeastern United States, stated that:

> . . . We have very good reason to believe that it may be possible to ameliorate the very heavy snowstorms which occur on the lee side of Lake Erie, especially in November and December of each year. . . . Now, we have a reasonable hypothesis about the possibility that we could spread that snow over a wider area, and therefore, eliminate these tremendous snowfalls. We intend to test that hypothesis in practice this coming year on an experimental R. & D. basis.

Hearings on S. 373 *and S.* 2058 *Before the Senate Comm. on Commerce,* 90th Cong., 2d Sess. at 34 (1968).

3. S. 373, 90th Cong., 2d Sess. § 102(a) (1968).

4. The area of storm modification includes the prevention of extreme weather conditions such as hurricanes and tornadoes. However, basic research will have to be conducted in these two areas before practical results can be obtained. *See,* S. REP. No. 1139, *supra* note 2, at 34.

and rocket exhaust contamination on meteorological conditions . . ."[5] in future studies.

The increasing interest in this subject may be due to the great economic benefits that may be obtained in various areas by effective control of the atmosphere.[6] The most obvious form of control is that of increasing precipitation through cloud seeding.[7] In the western states of the United States where there is a shortage of water resources, agricultural interests would benefit from a program of increasing precipitation to augment water resources. Indeed, legislation has been proposed to set up such a program.[8] Benefits may also be obtained from the diversion or suppression of rainfall by businesses that do not require much rainfall.[9] The dispersal of fog at airports and the prevention of sleet on roads may have substantial effect on transportation. The modification of hurricanes and tornadoes to prevent harmful effects may serve to illustrate the vast range of activities and people affected. In this case benefits would not be limited to prevention of harm, but would also include the elimination of costly preventive measures that would have to be taken to minimize injury.[10] Thus, weather modification activities both directly and indirectly may be of substantial economic effect and of great influence on many people in the future.

As basic research expands technical knowledge and as operational activities become more effective and extensive, the size of the weather modification projects will increase.[11] Subsequently, larger areas of geography and economics will be affected, and expenses will increase in basic research and development of operational activities. This additional expense will be due not only to the above increased costs, but will also be due to the administration that is necessary to coordinate and evaluate research and activities,

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5. S. REP. No. 1139, *supra* note 2, at 5.

6. *See,* Corbridge & Moses, *supra* note 1, at 207-08, where the authors state that weather forecasting saves the economy approximately 2 billion dollars annually and suggest that the benefits from weather control may be much greater. For example, S. REP. No. 1139, *supra* note 2, at 5, stated:

> (2) There is increasing evidence that annual precipitation increases of the order of 10 per cent can be achieved through seeding of winter orographic clouds with ground-based silver iodide generators. This conclusion supports the conclusion reached in 1957 by the Advisory Committee on Weather Control.

This increase in precipitation, if properly controlled, would be a valuable asset to both agriculture and industry.

7. On the method and theory by which cloud seeding with silver iodide crystals or dry ice may cause precipitation to occur, *see* S. REP. No. 1139, *supra* note 2, at 14.

8. S. 2058, 90th Cong., 2d Sess. (1968).

9. *See,* Slutsky v. City of New York, *infra* note 60 (where a resort owner tried to enjoin the City of New York from conducting weather modification activities to increase precipitation on the grounds that increased precipitation would be harmful to his business).

10. Corbridge & Moses, *supra* note 1, at 208.

11. *See generally* S. REP. No. 1139, *supra* note 2 at 11-19; Taubenfeld, *Weather Modification and Control: Some International Legal Implications,* 55 CALIF. L. REV. 493 (1967).

and to properly disseminate information.[12] These developments in weather modification have begun and will continue a trend from local and state projects to national and regional projects. Also, as many of these projects seek to regulate regional conditions, weather modification will increasingly become international in effect.[13]

The North Dakota Weather Modification Act

Although weather modification activities may bring great economic benefit and a more predictable and usable climate, there are grave risks involved in unrestrained experimentation and practice.[14] Possibly in light of these dangers the North Dakota legislature enacted a weather modification law[15] in 1965 regulating such activities.

At the time of the North Dakota enactment, there was no federal regulation of weather modification.[16] However, during the summer prior to the enactment, operational activities were conducted within the state to increase precipitation and to suppress hail.[17] These activities covered roughly one-fourth of the state's land area.[18] Thus, due to the actual and extensive nature of operations in North Dakota, conducted without regulation as to the nature and use of such operations, there was a present need for such regulatory legislation by the state. The fact that this need was pressing may be noted by the fact that the bill was given immediate effect upon approval through the attachment of an emergency clause to the bill.[19]

The North Dakota weather modification law requires that any person who engages in weather modification activities must obtain a license,[20] and that such person ". . . shall comply with rules, regulations and standards that may be promulgated by the issuing authority . . . ,"[21] the North Dakota Aeronautics Commission. The law thus leaves to the discretion of the Commission ". . . the pro-

12. *See, Hearings on S.* 373 *and S.* 2058 *Before the Senate Comm. on Commerce,* 90th Cong., 2d Sess., at 1-3 (1968); Colbridge & Moses, *supra* note 1, at 226-27.
13. Corbridge & Moses, *supra* note 1, at 227-34; Taubenfeld, *supra* note 11.
14. *See,* Slutsky v. City of New York, *infra* note 60; Southwest Weather Research, Inc. v. Rounsaville, *infra* note 64 (where landowners sought an injunction to prevent weather modification activities which caused clouds above their land to disperse).
15. N.D. CENT. CODE §§ 2-07-01 to 2-07-13, 58-03-07(19) (Supp. 1967). The bill, S. 169, passed the Senate with little difficulty, but met with considerable opposition in the House. N.D. S. JOUR., 39th Sess., at 929-30 (1965); N.D. H. JOUR., 39th Sess., at 1344 (1965).
16. The first federal regulation of weather modification was a 1966 National Science Foundation regulation. It merely required that the operator file a notice of the proposed activity thirty days prior to commencement and submit reports on a quarterly basis on the activity. 45 C.F.R. § 635 (1968).
17. S. REP. No. 1139, *supra* note 2, at 137.
18. *Id.* The areas affected were in the western part of the state.
19. N.D. S. JOUR., 39th Sess., at 276 (1965).
20. N.D. CENT. CODE § 2-07-03 (Supp. 1967).
21. N.D. CENT. CODE § 2-07-04 (Supp. 1967).

cedures, requirements, conditions, qualifications and professional standards under which licenses . . . may be issued . . . ,"[22] as well as, what reports may be required from the licensee and the person engaging the licensee.[23] The Commission, as issuing authority, is required to follow the procedures in the Administrative Agencies Practice Act in its issuance of licenses, regulations and standards.[24]

The legislature, in announcing the purpose for the new law, stated that:

> In order that the state may share to the fullest extent in the benefits already gained through fundamental research and investigation on new and improved means for predicting, influencing and controlling the weather, for the best interest, general welfare, health and safety of all the people of the state, and to provide proper safeguards in applying the measures for use in connection therewith in order to protect life and property, it is deemed necessary and hereby declared that *the state of North Dakota claims its sovereign right to use the moisture contained in the clouds and atmosphere within the sovereign state boundaries.*[25]

In order that the state may successfully derive benefit from its right of use, the law provides for a system under which counties may conduct[26] and finance[27] weather modification activities, either by themselves or in conjunction with other governmental agencies or units.[28] In accord with the purposes, the law seems to contemplate that weather modification will be conducted primarily by the counties, although there is no specific prohibition against individuals contracting for weather modification operations provided that the weather modifier has obtained a valid license and the parties have

22. N.D. CENT. CODE § 2-07-05 (Supp. 1967).
23. N.D. CENT. CODE § 2-07-03 (Supp. 1967).
24. N.D. CENT. CODE § 2-07-02(7) (Supp. 1967). Under the Administrative Agencies Practice Art, N.D. CENT. CODE ch. 28-32 (1960), the Commission is required to follow certain administrative procedures in the issuance of its regulations. Also, the licensee or other agrieved party whose rights are substantially affected by a final order or decision of the Commission has the right to appeal to the district court for review of the decision or order.

Some other states have enacted similar provisions either incorporating their administrative procedure act into their weather modification statute or providing other means of obtaining judicial review. *See,* CAL. WATER CODE § 414 (West 1956); COLO. REV. STAT. ANN. §§ 151-1-9, 151-1-10 (1963); FLA. STAT. ANN. § 373.381 (1960), *as amended,* (Supp. 1969); N.M. STAT. ANN. § 75-37-11 (1968); ORE. REV. STAT. § 558.130 (1967); PA. STAT. ANN. tit. 3, § 1113 (Supp. 1969). These provisions, however, may not be adequate in all instances where there is a need for judicial review of an administrative decision, but it does represent a recognition of the need for reviewing procedures. By incorporating an administrative procedures act into a weather modification statute, a state can at least insure that a party will have the greatest recourse against arbitrary action of an administrative agency and that progressive reforms in the procedures act will automatically apply to the weather modification board or commission.

25. N.D. CENT. CODE § 2-07-01 (Supp. 1967) (emphasis added).
26. N.D. CENT. CODE §§ 2-07-06, 2-07-08, 58-03-07(19) (Supp. 1967).
27. N.D. CENT. CODE §§ 2-07-06, 2-07-07 (Supp. 1967).
28. N.D. CENT. CODE § 2-07-06 (Supp. 1967). If the activity is not in conjunction with some other governmental agency or unit, the county is restricted to the area of the county itself. This limitation would seem to be a good method of limiting the dangerous effects of a county undertaking a project having far reaching effects.

complied with the regulations, conditions and standards that may be determined by the Commission. In order that the public may have a chance to be notified and to decide whether the county should conduct any operations, the law provides for public hearings and elections before funds may be appropriated or raised by a tax levy on real property.[29] However, after approval by the electorate, there is no provision for review of the county's actions during a five year period.[30] No provision is stipulated for public hearings in the case of a private individual.

On the subject of liability, the law requires that the licensee give a performance bond to the county that he will properly carry out his contract with the county.[31] The law also includes a non-liability provision by which the state, its agencies, its officials, and the county and its officials will not be liable to third parties for the actions of the licensed contractor.[32] No mention is made of the liability of the independent contractor for injury to third parties.

A Comparison With Other State Legislation

Twenty-four other states have some form of legislation on the subject of weather modification[33] and fifteen of these states require licensing or certification before weather modification activities may be conducted.[34] Some of these licensing provisions are more explicit than the North Dakota statute in stipulating the requirements and

29. N.D. CENT. CODE §§ 2-07-06, 2-07-07 (Supp. 1967).

30. N.D. CENT. CODE § 2-07-06 (Supp. 1967).

31. N.D. CENT. CODE § 2-07-09 (Supp. 1967).

32. N.D. CENT. CODE § 2-07-10 (Supp. 1967).

33. ARIZ. REV. STAT. ANN. §§ 45-2401 to 45-2407 (1956); CAL. WATER CODE §§ 400 to 415 (West 1956), *as amended,* (Supp. 1968), § 235 (Supp. 1968); COLO. REV. STAT. ANN. §§ 151-1-1 to 151-1-12 (1963); CONN. GEN. STAT. ANN. §§ 24-5 to 24-8 (1958), *as amended,* (Supp. 1968); FLA. STAT. ANN. §§ 373.261 to 373.391 (1969), *as amended,* (Supp. 1969); HAWAII REV. LAWS § 86-5 (Supp. 1963); IDAHO CODE ANN. 22-3201, 22-3202 (1968); LA. REV. STAT. ANN. §§ 37:2201 to 37:2208 (1964); MD. ANN. CODE art. 66C, § 110A Supp. 1968); MASS. GEN. LAWS ANN. ch. 6, § 72 (1966); MONT. REV. CODES ANN. §§ 89-310 to 89-331 (Supp. 1967); NEB. REV. STAT. §§ 2-2401 to 2-2449 (1962), *as amended,* (Supp. 1965); Weather Modification Research Law, NEV. REV. STAT. §§ 544.010 to 544.060 (1961), NEV. REV. STAT. §§ 544.070 to 544.240 (1961): N.H. REV. STAT. ANN. § 432:1 (1968); Weather Control Act, N.M. STAT. ANN. §§ 75-37-1 to 75-37-15 (1968); N.Y. GEN. MUN. LAW § 119P (McKinney Supp. 1968); ORE. REV. STAT. §§ 558.010 to 558.990 (1967); PA. STAT. ANN. tit. 3, §§ 1101 to 1118 (Supp. 1969); S.D. CODE § 4.23 (Supp. 1960); Weather Modification Act, TEX. CIV. STAT. ANN. Art. 8280-12 (Vernon Supp. 1968); UTAH CODE ANN. §§ 73-15-1, 73-15-2 (1968); WASH. REV. CODE ANN. §§ 43.37.010 to 43.37.200 (1965), *as amended,* § 43.27A.080 (Supp. 1968); WIS. STAT. ANN. § 195.40 (Supp. 1968); WYO. STAT. ANN. §§ 9-267 to 9-276 (Supp. 1967).

34. ARIZ. REV. STAT. ANN. § 45-2401 (1956); CAL. WATER CODE § 402 (West 1956); COLO. REV. STAT. ANN. § 151-1-5 (1963); FLA. STAT. ANN. § 373.281 (1960); IDAHO CODE ANN. § 22-3201 (1968); LA. REV. STAT. ANN. § 37:2203 (1964); MONT. REV. CODES ANN. § 89-313 (Supp. 1967); NEB. REV. STAT. § 2-2406 (1962); NEV. REV. STAT. § 544.120 (1961); N.M. STAT. ANN. § 75-37-4 (1968); ORE. REV. STAT. § 558.030 (1967); PA. STAT. ANN. tit. 3, § 1105 (Supp. 1969); S.D. CODE § 4.2305(1) (Supp. 1960); TEX. CIV. STAT. ANN. Art. 8280-12(7) (Vernon Supp. 1968); WASH. REV. CODE ANN. § 43.37.080 (1965), *as amended,* § 43.27A.080 (Supp. 1968).

qualifications that are needed to obtain a license.[35] For example, the California statute provides that:

> Every application shall set forth all of the following:
> . . .
> (b) The previous education, experience, and qualifications of the applicant, or, if the applicant is other than an individual, the previous education, experience, and qualifications of the persons who will be in control of and charged with the operations of the applicant.
> (c) A general description of the operations which the applicant intends to conduct and the method and type of equipment that the applicant proposes to use.
> (d) Such other pertinent information as the department may require.[36]

The provisions of the above statute help to set forth the minimum, required inquiry into the qualifications of the weather modifier and help to guide the licensing authority in the determination of what specific requirements are needed to secure the best interests and protection of the people. The North Dakota statute leaves undefined the minimum inquiry that the Commission should make prior to the issuance of a license.

Some of the state statutes, that require licensing, also require that the specific operation be approved prior to implementation.[37] These statutes require either a permit[38] with publication of a notice of intention in the area to be affected[39] or publication of a notice of intention only.[40] Proof of financial responsibility[41] is also required in most of these states, but it is not quite clear as to

35. *See, e.g.*, ARIZ. REV. STAT. ANN. § 45-2403 (1956); COLO. REV. STAT. ANN. § 151-1-6 (1963); FLA. STAT. ANN. § 373.291 (1960); N.M. STAT. ANN. § 75-37-6 (1968): PA. STAT. ANN. tit. 3, § 1106 (Supp. 1969).

36. CAL. WATER CODE § 404 (West 1956).

37. *See, e.g.*, CAL. WATER CODE §§ 407 to 410 (West 1956), *as amended*, (Supp. 1968); MASS. GEN. LAWS ANN. ch. 6, § 72 (1966); NEV. REV. STAT. §§ 544.120, 544.150 to 544.190 (1961); PA. STAT. ANN. tit. 3, 1108 (Supp. 1969); WASH. REV. CODE ANN. §§ 43.37. 080, 43.73.110 to 43.37.140 (1965), *as amended*, § 43.27A.080 (Supp. 1968).

38. MASS. GEN. LAWS ANN. ch. 6, § 72 (1966) (Massachusetts does not require licensing, but it does require a certificate, which acts as a permit, for each activity conducted); MONT. REV. CODES ANN. § 89-319 (Supp. 1967); NEV. REV. STAT. § 544.120 (1961); TEX. CIV. STAT. ANN. Art. 8280-12(11) (Vernon Supp. 1968); WASH. REV. CODE ANN. § 43.37.120 (1965), *as amended*, 43.27A.080 (Supp. 1968). Wyoming requires a permit for each operation but does not require publication of a notice of intention. WYO. STAT. ANN. § 9-271 (Supp. 1967).

39. MASS. GEN. LAWS ANN. ch. 6, § 72 (1966); MONT. REV. CODES ANN. § 89-320 (Supp. (1967); NEV. REV. STAT. § 544.160 (1961); TEX. CIV. STAT. ANN. Art. 8280-12(11) (Vernon Supp. 1968); WASH. REV. CODE ANN. § 43.37.120 (1965), *as amended*, § 43.27A.080 (Supp. 1968).

40. CAL. WATER CODE § 407 (West 1956): FLA. STAT. ANN. § 373.321 (1960); ORE. REV. STAT. § 558.070 (1967); PA. STAT. ANN. tit. 3, § 1108 (Supp. 1969).

41. FLA. STAT. ANN. § 373.301 (1960); MONT. REV. CODES ANN. § 89-323 (Supp. 1967); NEV. REV. STAT. §§ 544.150(3), 544.190 (1961); ORE. REV. STAT. 558.050 (1967); PA. STAT. ANN. tit. 3, § 1106(b)(5) (Supp. 1969); TEX. CIV. STAT. ANN. Art. 8280-12(14) (Vernon Supp. 1968); WASH. REV. CODE ANN. § 43.37.150 (1965), *as amended*, § 37.27A.080 (Supp. 1968).

what liability this financial responsibility is to cover or to the extent of this coverage.[42] A few states even provide that a public hearing shall be conducted prior to the approval of each operation.[43] Thus, although mere procedural formalities, these provisions afford regulations which can prevent, in time, a potentially harmful operation. The Commission in North Dakota, likewise, may provide such safeguards,[44] but the statute does not explicitly provide such regulation and, thus, affords a loophole in effective regulation. In the specific case of public hearings and publication of notice of intention, the lack of these mandatory provisions may remove one of the most effective means of regulation, i.e., timely objections by the segment of the public which has an interest adverse to that of the weather modifier.[45]

Any state regulation once a particular operation is approved or is operative is presently in the form of reports to be submitted to the regulating agency.[46] Usually the reports will be submitted after the operation is finished, but the reports in some states may be required while the operation is still in effect if it covers a substantial period of time.[47] Although the North Dakota statute does allow the Commission to require reports, this provision,[48] like those of other states, does not adequately insure that proper procedures are being used at the time the activities are being conducted. On-location inspection and evaluation by qualified inspectors is

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42. Some states set numerical limits upon the amount of insurance, bond or ability to pay needed. *See, e.g.*, NEV. REV. STAT. § 544.150(3) (1961) (limited to $20,000); ORE. REV. STAT. § 558.050 (1967) (maximum of $100,000 each for personal injuries and property damage for each incident); PA. STAT. ANN. tit. 3, § 1106(b)(5) (Supp. 1969) (up to $50,000 bond or insurance policy). However, some states do not set any such monetary limits or guides, no matter how unrealistic they may be. *See, infra* note 50. For a more complete discussion of liability and financial responsibility *see, infra* notes 49 to 54 and accompanying text.

43. MASS. GEN. LAWS ANN. ch. 6, § 72 (1966); MONT. REV. CODES ANN. § 89-318(6) (Supp. 1967); WASH. REV. CODE ANN. § 43.37.110(6) (1965), *as amended*, § 43.27A.080 (Supp. 1968).

44. The commission may provide these procedures under its discvretionary powers of regulation granted it in N.D. CENT. CODE § 2-07-05 (Supp. 1967):

45. In North Dakota the hearings conducted under § 2-07-06 do not act to notify the public since they are only held once in a five year period.

46. ARIZ. REV. STAT. ANN. § 45-2404 (1956); CAL. WATER CODE § 412 (West 1956) (evaluation statement upon request of department); COLO. REV. STAT. ANN. § 151-1-7 (1963); FLA. STAT. ANN. § 373.361 (1960); IDAHO CODE ANN. § 22-3202 (1968); LA. REV. STAT. ANN. § 37:2207, 37:2208 (1964) (Under § 2208 the commissioner must evaluate each weather modification operation, presumably from the submission of reports or inspection of logs); MONT. REV. CODES ANN. § 89-327 (Supp. 1967); NEV. REV. STAT. § 544. 210 (1961); N.M. STAT. ANN. § 75-37-9 (1968); ORE. REV. STAT. § 558.110 (1967); PA. STAT. ANN. tit. 3, § 1110 (Supp. 1969); TEX. CIV. STAT. ANN. Art. 8280-12(16) (Vernon Supp. 1968); UTAH CODE ANN. § 73-15-1 (1968); WASH. REV. CODE ANN. § 43.37.170 (1965), *as amended*, § 43.27A.080 (Supp. 1968); WIS. STAT. ANN. § 195.40(4) (Supp. 1968); WYO. STAT. ANN. § 9-273 (Supp. 1967).

47. ARIZ. REV. STAT. ANN. § 45-2404 (1956) (every six months); N.M. STAT. ANN. § 75-37-9 (1968) (every three months). In a number of other state statutes the requirements as to times when reports are to be submitted is discretionary with the regulating agency.

48. N.D. CENT. CODE § 2-07-03 (Supp. 1967) (under this provision the requirement of submitting reports is entirely discretionary with the Commission).

necessary and would greatly increase the protection afforded to the people of the state.

Many of the states that require licensing have statutory provisions covering financial responsibility.[49] Montana's provision is a typical example and states:

> Proof of financial responsibility may be furnished by an applicant by his showing, to the satisfaction of the board, ability to respond in damages for liability which might reasonably be attached to, or result from, his weather modification and control activities.[50]

The above statute makes it clear that the licensee must be able to pay for damage due to his activities for which he is liable, but it does not mention what the damages may be, what the extent of his liability may be, or to whom he may be liable. Since there are only two reported cases on the subject of liability for injury due to weather modification activities,[51] a determination by an agency as to the sufficiency of a licensee's financial responsibility would be meaningless without legislative or judicial determination of the above questions.[52] North Dakota, on the other hand, is not

49. FLA. STAT. ANN. § 373.301 (1960); MONT. REV. CODES ANN. § 89-323 (Supp. 1967); NEV. REV. STAT. § 544.190 (1961); N.M. STAT. ANN. § 75-37-7 (1968); ORE. REV. STAT. § 558.050 (1967); PA. STAT. ANN. tit. 3, § 1106(b)(5) (Supp. 1969); TEX CIV. STAT. ANN. Art. 8280-12(14) (Vernon Supp. 1968); WASH. REV. CODE ANN. § 43.37.150 (1965), *as amended*, § 37.27A.080 (Supp. 1968).

50. MONT. REV. CODES ANN. § 89-323 (Supp. 1967).

51. Slutsky v. City of New York, *infra* note 60; Southwest Weather Research, Inc. v. Rounsaville, *infra* note 64.

52. The Texas Weather Modification Act, on the subject of liability, states:

> Nothing in this Act shall be construed . . . to affect in any way any contractual, tortious or other legal rights, duties or liabilities between any private persons or groups, provided, however, that any operation conducted pursuant to the license and permit requirements of this Act shall not constitute "an ultrahazardous activity" such as to subject the participant therein to liability without fault. However, the fact that any private person or group of persons, corporation, organization, or any other entity has secured a license or permit or otherwise complied with this Act, or the rules and regulations promulgated pursuant to this Act, shall not be admissible evidence in any legal proceeding brought against such private person or group.

TEX. CIV. STAT. ANN. Art. 8280-12(18) (Vernon Supp. 1968). This provision does little to define the area of liability, except that suit on a tort concept will not include liability without fault. The legislature in this case appears to be willing to allow the courts to develop the law in this area along a case-by-case basis, although the courts of that state have shown uncertainty as to what rules and principles to apply and develop. *See,* Southwest Weather Research v. Rounsaville, *infra* note 64, *aff'd sub nom.* Southwest Weather Research v. Jones, *infra* note 64, at 421.

The recent Pennsylvania statute appears to be more specific, however, stating that:

> Any licensee who causes a drought as determined by the board shall compensate farmers for damages. Any licensee who by causing heavy downpours or storms which cause damage to lands as determined by the board shall compensate farmers and property owners for such damages.

PA. STAT. ANN. tit. 3, § 1114 (Supp. 1969). This provision makes a definite attempt to define liability and provide for adequate recovery, regardless of fault, under its financial responsibility provision, § 1106(b)(5). The above liability provision, although giving definite meaning to the term, financial responsibility, does not include all forms in which injury may arise (personal injuries are not included) or whether settlement is to be conducted principally by the Board or the court. The provision does represent, however, positive attempt to end some of the uncertainties about liability.

concerned with the financial responsibility of the weather modifier except to the extent that he must submit a performance bond insuring that he will carry out his contract with the county.[53] In addition, the North Dakota non-liability section, like that of some other states,[54] illustrates the reluctance of the states to underwrite weather modification activities. The omission on the part of the states to define financial responsibility properly will have to be corrected in order to prevent injury without adequate compensation. As future weather modification activities grow more effective, and, also, more potentially harmful, financial responsibility for injury by someone will become a necessity.

Research activities, conducted by the states, are rather limited due to lack of funds. The research in North Dakota would appear to be conducted primarily by way of cooperation with the federal government due to the lack of funding under the North Dakota statute.[55] At present, the federal government is financing most of the research due to the large expenditures necessary for basic research.[56] In the future, with multiplying costs, the federal government will come to exclusively dominate the area of research.

Ownership and Use of the Moisture in the Clouds

In order to understand North Dakota's declaration of use of the moisture contained in the clouds and atmosphere within the state boundaries, it will be necessary to examine some of the problems involved in the ownership of real property and the right to use of water resources. Six other states, to varying degrees, have declared the right to use of the moisture in the air above their respective states.[57] However, many licensing states have not followed suit, because the right of use was not essential to the purpose of their legislation; i.e., the effective regulation of weather modification activities. The right of use involves another legislative determination. This determination is that the right to use of the moisture is the common property of the people of the state and that this right can best be utilized if held and directed by the state for the people's benefit.[58] On a broader scale it is suggested that

53. N.D. CENT. CODE § 2-07-09 (Supp. 1967).
54. N.D. CENT. CODE § 2-07-10 (Supp. 1967). MONT. REV. CODES ANN. § 89-330 (Supp. 1967); NEV. REV. STAT. § 544.230 (1961); TEX. CIV. STAT. ANN. Art. 8280-12(18) (Supp. 1968); WASH. REV. CODE ANN. § 43.37.190 (1965), *as amended*, § 43.27A.080 (Supp. 1968); WYO. STAT. ANN. § 9-276 (1959).
55. N.D. CENT. CODE § 2-07-11 (Supp. 1967). *See also* CAL. WATER CODE § 235 (West Supp. 1968); Weather Modification Research Law, NEV. REV. STAT. §§ 544.010 to 544.060 (1961).
56. *See generally* S. REP. No. 1139, *supra* note 2. *See also* S. 373, 90th Cong., 2d Sess. § 404 (1968).
57. COLO. REV. STAT. ANN. § 151-1-1 (1963); LA. REV. STAT. ANN. § 37:2201 (1964); NEB. REV. STAT. § 2-2401 (1962); N.M. STAT. ANN. § 75-37-3 (1968); S.D. CODE § 4.2301(1) (Supp. 1960); WYO. STAT. ANN. § 9-267 (Supp. 1967).
58. *Id;* N.D. CENT. CODE § 2-07-01 (Supp. 1967).

eventually this right of use and weather control, subject to certain limitations, will be the common property of all mankind.[59]

This legislative appropriation would not be valid if ownership in the moisture had vested in the owner of the land below. In *Slutsky v. City of New York* the court parenthetically stated, though without giving any reasons, that the landowners ". . . clearly have no vested property right in the clouds or the moisture therein. . . ."[60] However, the reasons for non-ownership of the clouds by the landowners below might be understood by use of a principle of ownership in real property that:

> Both rights of use and ownership were based on occupancy. Occupancy required (1) an act of control or dominance over the object and (2) intention of the occupier to appropriate the object to his own use. If either of these elements is missing, there is no occupancy; the object remains in the negative community . . . [, state of common ownership].[61]

Thus, since clouds or the moisture therein have never been occupied or reduced to a state of possession no one has obtained a vested right of ownership in the clouds.

Traditionally, under these principles no one has obtained a right of use, since a person would have to exercise control in order to obtain a right of use. Although it would appear that in the absence of a statute that the right of use would be obtained by the person who first appropriates the moisture, it can be asserted that the individual landowner has a prior right of use irrespective of control or appropriation. A landowner has the right to use of the land in its natural condition. Usually under this principle a landowner has the right to support, riparian rights (in most states), the right to drainage, the right to the natural diffusion of air, and the right to reasonable use.[62] If a landowner's use of the land requires the use of the moisture that naturally falls on his land, such as in the case of farming, he may be said to have a natural right to use of the natural precipitation. This right is based on the right to reasonable use of the land, and it may even gain recognition as a separate natural right.[63]

In *Southwest Weather Research, Inc. v. Rounsaville,* the Texas Court of Civil Appeals, in granting a temporary injunction, stated:

> We believe that under our system of government the

59. Taubenfeld, *supra* note 11, at 501-05.
60. 197 Misc. 730, 97 N.Y.S.2d 238, 239 (Sup. Ct. 1950).
61. Note, *Who Owns the Clouds?*, 1 STAN. L. REV. 43, 47 (1948) (footnotes omitted).
62. *Id.* at 51-52.
63. *Id.* at 51-57.

> landowner is entitled to such precipitation as Nature deigns to bestow. We believe that the landowner is entitled, therefore and thereby, to such rainfall as may come from clouds over his own property that Nature, in her caprice, may provide. It follows, therefore, that this enjoyment of or entitlement to the benefits of Nature should be protected by the courts if interferred with improperly and unlawfully.[64]

The court recognized the right to natural precipitation as an incident to ownership of real property, but it did not place any limitation on this right. If each landowner had a right to all of the natural precipitation, weather modification activities in the area of precipitation control would be limited to the extent that it could increase precipitation and not interfere with any landowner's natural precipitation. Thus, according to the court's ruling the underlying landowner would have the right to all of the natural precipitation regardless of whether there was a wasting of this resource.

As a viable limitation, the landowner's right to use should be limited to the extent that he requires or is benefited by this natural rainfall, as an incident to his ownership. Thus, under this rule the moisture in the clouds that is not needed by the underlying landowner could either be appropriated by the state or individual.[65]

Since a landowner has the right to the reasonable enjoyment of his land, substantial interference with this right by the government in the performance of its functions is a taking of property for a public purpose for which compensation must be paid.[66] Hence, if the right to the reasonable use of natural rainfall is an essential incident to the landowner's enjoyment of the land, substantial interference with this natural right through weather modification will result in a taking of property for a public purpose without compensation. Thus, a landowner could bring an action against the government for a taking of private property through a deprivation of the right to reasonable use to the natural rainfall under a theory of inverse condemnation.

Similarly, a landowner may be deprived of the reasonable enjoyment to the land by the government through weather modification activities which increase rainfall. Hence, if the increases in rainfall substantially interfere with the right to reasonable enjoyment of the land, the landowner, likewise, may bring an action under the theory of inverse condemnation.[67]

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64. 320 S.W.2d 211, 216 (Tex. Civ. App. 1958), *aff'd sub nom.* Southwest Weather Research, Inc. v. Jones, 160 Tex. 104, 327 S.W.2d 417 (1959).
65. *See generally* Note, *supra* note 61, at 54.
66. United States v. Causby, 328 U.S. 256 (1946) (a landowner was allowed recovery for injuries due to overflights of armed forces planes at low altitudes over his land, although there was not a complete taking).
67. *cf.* Jamestown Plumbing & Heating Co. v. City of Jamestown, 164 N.W.2d 355 (N.D. 1968).

The *North Dakota Constitution*, art. I, § 14, provides that "[p]rivate property shall not be taken or damaged for public use without just compensation. . . ." Under this provision the state or its political subdivisions must compensate for the taking of property for a public purpose. Thus, if the above theories on condemnation due to governmental weather modification may be successfully argued, the state, when it substantially interferes with these rights of the landowner, would have to compensate for the taking. Such a taking would certainly be for a public use in light of North Dakota's declaration to the use of the moisture in the atmosphere within the state. An action under the theory of inverse condemnation in North Dakota would be brought on the basis of an implied contract with the state to pay for the property taken.[68]

Subject to the above limitations, in dealing with the benefits of increased precipitation and weather control a choice must be made between allowing the government to retain the use for the common benefit of all the people, or to allow individuals to appropriate this use for themselves. There are a number of good reasons for retaining this use for the common benefit of all the people. The most important reason deals with the need for regulation of the economic and social effects caused by a large and useful water reserve. Since a large, new supply of water may bring about drastic changes in some parts of the country, it would be beneficial to the people generally, to have the government regulate these changes, eliminating or cushioning some of the adverse effects. Also, the indirect effects from the operation itself may affect many people other than those conducting or sponsoring the activity, or in the region affected. The atmosphere and our economy is composed of an interconnected whole, and therefore, a change in its composition will cause other indirect changes, some of which will not be desirable to those affected.

The problem of financial ability to pay for injury caused through pure accident raises an additional reason for requiring the government to hold this right to use for the public benefit. North Dakota has taken the initial step in the preferred method of governmental direction for the public benefit and protection. However, the question still remains as to whether the states should be the means for providing this governmental direction; whether the states have the ability and the better right to direct.

Federal Regulation

At the present time the federal government does not have a comprehensive statute regulating weather modification activities,

68. *Id.* at 358-59. *See*, Schilling v. Carl Township, 60 N.D. 480, 235 N.W. 126 (1931).

although it does conduct most of the research through its departments and the National Science Foundation.[69] There are a number of reasons why the federal government has not entered the field more forcefully, both in terms of research and regulation. *Senate Report No.* 1139 stated that part of the inaction of the government is due to the fact that national goals have not been set and that the field has not been properly defined.[70] This situation has resulted in lack of interest on the part of Congress and the public. To remedy the situation and, hopefully, to provide a coordinated and concise program, *Senate Bill No.* 373[71] was proposed, however, has not been enacted. The reason why this bill and others like it have not been passed may be due to a dispute between the Departments of Commerce and Interior.[72] This dispute involves the issue as to which of these two departments will have the major role of overseeing the program. *Senate Bill No.* 373 was an attempt at a compromise solution.[73] Thus, it will be necessary to settle this dispute prior to the enactment of effective federal legislation.

The power of the federal government to regulate weather modification under the commerce clause has been questioned.[74] However, it is clear today that Congress has the power to regulate. This power is derived from the principle that Congress may regulate an activity that ". . . exerts a substantial economic effect on interstate commerce. . . ."[75] Since control of water resources in the atmosphere would have a substantial economic effect, Congress would be able to regulate such activities.

In the future effective federal legislation will determine who will benefit and how they will benefit from weather modification.[76] Although the federal government may not declare its sovereign right to the moisture in the air, comprehensive legislation, as currently envisaged, will in effect preempt the North Dakota declaration's right of use. For example, *Senate Bill No.* 373 provided that:

> The Congress hereby declares that it is the policy of the United States to develop, encourage, and maintain a comprehensive and coordinated program in weather modification in order to contribute to—
>
> (1) the protection of life and property,

69. S. REP. No. 1139, *supra* note 2, at 5-6. Also, the National Science Foundation is the only federal agency that has implemented any regulation concerning weather modification. *See, supra* note 16.

70. *Supra* note 2, at 1-2.

71. 90th Cong., 2d Sess. (1968).

72. S. REP. No. 1139, *supra* note 2, at 18; Colbridge & Moses, *supra* note 1, at 221-23.

73. Colbridge & Moses, *supra* note 1, at 221-25.

74. Note, *Artificial Rainmaking*, 1 STAN. L. REV. 508 (1949).

75. Wickard v. Filburn, 317 U.S. 111, 125 (1942).

76. *See generally* Colbridge & Moses, *supra* note 1, at 221-25, 227-34.

(2) the maintenance of adequate water resources for the United States,

(3) the enhancement of commerce, transportation, agriculture, natural resources, health, and security in the United States.[77]

Under this type of federal legislation the states would not be able to act autonomously and would only play a role to the extent permitted by federal legislation.

Due to the national character of weather modification the federal government does have the better right and the greater ability to coordinate, regulate and finance research and operational activities. The implementation of regional projects by the federal government would be of benefit, especially where the states either: (1) would or could not finance such projects, or (2) could not carry out such projects due to the infringement on another state's sovereignty.

In another aspect, concerning the ability to finance weather modification, the federal government is better equipped than the states to handle the situation. This area concerns the liability to third parties for injury caused by weather modification activities. As research develops new methods for effective weather control, the operational projects will become more extensive and potentialy more harmful. To then demand that a private contractor be able to financially assume liability that may be imposed would be unrealistic. Insurance companies would certainly balk at underwriting such an individual or operation where damages may extend far beyond available projections.[78] It has been proposed that the government underwrite such activities or licensees in the manner that the government has provided for licensees in atomic energy projects.[79]

Liability to Third Parties and an Indemnification Program

A consideration of the manner in which injury may arise and the methods by which liability may be imposed may clarify the need for some form of governmental indemnification and other remedial legislation. Injury may arise through governmental policy, negligence or accident without negligence. In these instances where the government and the licensee participate in an activity, an injured third party may attempt to sue the government, the licensee or both. However, in some cases the injured third party may not

77. S. 373, 90th Cong., 2d Sess. § 101(a) (1968).
78. *See generally* Colbridge & Moses, *supra* note 1, at 230.
79. *Id.*; S. 2875, 89th Cong., 2d. Sess. § 201 (1966).

sue one or both due to such factors as sovereign immunity or non-negligent operation.

The two reported cases, discussed earlier, indicated that sufficient interference with a landowner's right to reasonable use of his land may impose liability.[80] These cases, however, are not clear statements as to when liability will attach or to what extent. The judiciary, also, has not had an opportunity to discuss to what other types of injury, other than interference with real property, liability will attach.[81] It has been proposed that liability may be imposed by the common doctrines of nuisance, trespass, negligence, or strict liability.[82] However, each of these common law doctrines contain certain deficiencies in allowing recovery. For example, nuisance may not cover damage to personal property; trespass may not occur where there has been a diversion of moisture not directly above the lands of the owner;[83] negligence may not allow recovery where there is not sufficient proximity or where there is not recognized fault; strict liability may be barred by sovereign immunity.

Even by combining several of these remedies, they still suffer from more basic problems. They all require a certain minimum degree of proof that the damage was the result of the activity and involve costly litigation. Although technical information needed to prove damage will grow as weather modification becomes more effective,[84] it can be expected that there will be some gaps in our knowledge between the actual effects of the operation and the ability to explain these effects. In addition, the ". . . details of government research projects are frequently unavailable for public inspection, particularly when the research has possible military ramifications."[85] A government program of indemnification through a commission with sufficient expertise and knowledge of weather modification projects would do much to remove the problems of proof and costly litigation, in addition to insuring recovery of an award against a solvent defendant.

Senate Bill No. 2875,[86] a 1966 proposed weather modification

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80. Slutsky v. City of New York, *supra* note 60; Southwest Weather Research, Inc. v. Rounsaville, *supra* note 64.

81. *Id.* For a digest of the unreported cases in this area *see,* S. REP. No. 1139, *supra* note 2, at 80-81.

82. *See generally* S. REP. No. 1139, *supra* note 2, at 81-86.

83. *See,* Southwest Weather Research v. Rounsaville, *supra* note 64, at 216, where the court stated that:

> . . . We do not mean to say or imply at this time or under the conditions present in this particular case that the landowner has a right to prevent or control weather modification over land not his own. We do not pass upon that point here, and we do not intend any implication to that effect.

84. Note, *supra* note 61, at 60-61.

85. Colbridge v. Moses, *supra* note 1, at 213-14 (footnote omitted).

86. 89th Cong., 2d Sess. (1966). Section 201 of the bill provided that:

> The United States will compensate for the taking of property or rights, or for damage, injury, or for other just claims arising out of execution of the

bill, contained an indemnification program patterned after that found in the Atomic Energy Act of 1946, as amended.[87] Under the Atomic Energy program the government through the Atomic Energy Commission requires the licensee to insure against nuclear incident from private sources up to a certain limit[88] and then the government would underwrite the remaining portion up to $500,000,000 at very modest rates.[89] The Commission may also require the licensee, as a condition of his license, to waive any immunity from public liability conferred by federal or state law.[90] In the event of a nuclear incident in which the government will probably have to indemnify, the Commission is required to conduct a survey of the causes and extent of the damage, and is to make all of its final findings, except as prohibited, available to the parties involved and the courts.[91] Also, under a recent amendment the Commission and other indemnitors are allowed to make immediate payments to claimants following a nuclear incident, not for the purpose of settling a possible claim but to provide immediate assistance.[92] Such a plan, if incorporated into a weather modification act, would be a method of adequately insuring against most potential harm and would provide swift and certain recovery in the event of injury due to accident, eliminating problems of sovereign immunity, proof and cost of litigation.

A program for the adequate protection of the public should also provide for effective relief in the form of an injunction where a money remedy is inadequate and where, after a balancing of the benefits and liabilities to the public and the individual (or locality), it is determined that the greater benefit would be obtained if the injunction should issue.[93] The injunction form of remedy would give the maximum degree of protection to those regions and individuals who may be irreparably injured without sufficient countervailing social justification.

Since weather modification is national and international in scope, with the states ill-equipped to deal with the problems involved, the federal government should enact comprehensive legislation which would include a program of indemnification. Until the federal government acts, it will be the states' burden to regulate the area through

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comprehensive program in the manner provided in the Act of August 30, 1954, an Act to amend the Atomic Energy Act of 1946.

87. 42 U.S.C. §§ 2012(i), 2210 (1964), *as amended,* (Supp. II, 1966) (present form).

88. 42 U.S.C. § 2210(b) and (e) (1964), *as amended,* (Supp. II, 1966) (usual limit of $60,000,000).

89. 42 U.S.C. § 2210 (c) (Supp. II, 1966). Aggregate liability set at $560,000,000 for a single nuclear incident in the United States. 42 U.S.C. § 2210(e) (Supp. II, 1966).

90. 42 U.S.C. § 2210(a) (1964).

91. 42 U.S.C. § 2210(i) (1964).

92. 42 U.S.C. § 2210(m) (Supp. II, 1966).

93. *See,* Slutsky v. City of New York, *supra* note 60, at 240, where the court suggests such a balancing test.

effective legislation. State legislation should not be designed to be merely stop-gap measures but should adequately regulate activities in order to prevent potential harm to the public. The need for creativity and concise analysis in the drafting of such legislation is essential.

APPENDIX

The North Dakota Legislature recently has passed Senate Bill No. 300, as amended, entitled: "A Bill for an Act to create and enact sections 2-07-06.1, 2-07-06.2, 2-07-06.3, and to amend and reenact sections 2-07-06 and 2-07-07 of the North Dakota Century Code, relating to the creation of a weather modification authority and authorizing the counties to levy a tax for weather modification activities, and declaring an emergency." The bill would not change the basic struucture of the present weather modification act, but would provide for the creation of an independent weather modification authority for the county composed of five residents thereof, instead of allowing the county board of commissioners to conduct weather modification activities. The authority would be created upon the petition of 51 per cent of the qualified electors in the county. The amended bill did not increase the possible tax levy on real property. At the time of printing of this article the bill is being engrossed and awaiting action by the governor. N.D. S. 300, 41st Sess. (1969; as amended, N.D. S. JOUR., 41st Sess. 551-53 (unbound) (1969); N.D. H. JOUR., 41st Sess. 1302 (unbound) (1969). Passed, as amended, N.D. S. JOUR., 41st Sess. 646, 1237-38 (unbound) (1969); N.D. H. JOUR., 41st Sess. 1401 (unbound) (1969).

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